

NOTES ON A COLLECTION OF FISHES FROM THE MAUMEE VALLEY, OHIO.

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The following paper is based upon a small collection of fishes made in Defiance County, Ohio, by the writer in July, 1887. Less than one day was spent in seining in each of the following localities: Maumee River and Gordon Creek, near Cecil; Gordon Creek, near Cicero; Lost Creek, about 2½ miles southwest of Farmer; and in Forlow's Pond, 2 miles southeast of Cicero. The seining was done with a small Baird seine.

The Maumee River flows through a nearly unbroken region, and with a sluggish current. Near Cecil, Ohio, the current is swifter than usual and the bottom of the river is sandy, or in a few places rocky.

Gordon Creek is a northern tributary of the Maumee River, and it empties into the river a short distance below Cecil. The creek is small, and in the summer it becomes nearly dry, with little or no running water in it.

Such was the case at the time of our visit, and so the seining was done in a few deep holes by the road side about 1 mile above its mouth.

Cicero is 10 or 12 miles farther up the creek. At this point the creek is little more than a small brook, with a muddy bottom, with occasional stretches of sand.

Lost Creek is also a northern tributary of the Maumee River. It is larger than Gordon Creek, its bottom being more sandy; and, as it is fed by springs in the upper part of its course, it is seldom, if ever, without running water.

A few miles below Farmer the creek formerly lost itself in a large marshy tract of land, which at that time was covered with a dense growth of underbrush. In later years the marsh has been cleared up, and the water conducted through it by means of a series of large ditches to the main channel of the creek below.

Forlow's Pond is an artificial pool, made in 1882 for a reservoir to supply water for the tile factory of Forlow & Co. The pond covers about one-half acre. During high water in the spring it is in communication for a short time by means of ditches with Gordon Creek; it is also fed by an artesian well throughout the year.

In former years a greater portion of Defiance County was very heavily timbered. In the low lands black ash and oak were the predominating trees, while on the upper lands oak, white ash, walnut, beech, and maple predominated. Within the past thirty years much of the land has been cleared up, while large tracts of woodland still remain, however much

depleted of its best timber, and the other timber has been injured more or less by occasional fires.

A portion of the collection of fishes obtained in the above-named localities has been sent to the U. S. National Museum and to the museum of Indiana State University. I am indebted to Dr. D. S. Jordan for various aids in the preparation of this paper.

1. *Amia calva* Linnaeus.
Dog-fish.
P.* Common in 1882; none taken in 1887.
2. *Ameiurus nebulosus* (Le Sueur). (U. S. Nat. Mus., Cat. No. 40093.)
Common Bull-head.
M., L., C., G., P. Very abundant.
3. *Ameiurus melas* (Rafinesque). (U. S. Nat. Mus., Cat. No. 40092.)
M., L., C., G., P. Found with the above; abundant.
4. *Catostomus teres* (Mitchill). (U. S. Nat. Mus., Cat. No. 40088.)
Common White Sucker.
M., L., C., G. Abundant.
5. *Catostomus nigricans* Le Sueur.
Hog-sucker.
M. Not abundant.
6. *Erimyzon sucetta* (Lacépède). (U. S. Nat. Mus., Cat. No. 40090.)
Chub-sucker.
L., C., G. Scarce.
7. *Moxostoma duquesnei* (Le Sueur). (U. S. Nat. Mus., Cat. No. 40099.)
Red-horse Sucker.
M., L., C., G. Abundant.
8. *Campostoma anomalum* (Rafinesque). (U. S. Nat. Mus., Cat. No. 40089.)
Stone-lugger.
C. Not very abundant.
9. *Chrosomus erythrogaster* (Rafinesque).
Red-bellied Minnow.
L. Scarce.
10. *Pimephales promelas* Rafinesque. (U. S. Nat. Mus., Cat. Nos. 40084 and 40103.)
L., C., G. Not abundant.
11. *Pimephales notatus* (Rafinesque). (U. S. Nat. Mus., Cat. Nos. 40085 and 40102.)
M., L., C., G. More abundant than the former.
12. *Notropis microstomus* (Rafinesque). (U. S. Nat. Mus., Cat. No. 40112.)
(*Hybopsis stramineus* Cope.)
M. Two specimens taken.

* The following abbreviations are used: M. Maumee River, near Cecil, Ohio. L. Lost Creek. P. Forlow's Pond. C. Gordon Creek, near Cecil, Ohio. G. Gordon Creek, near Cicero, Ohio.

13. *Notropis volucella* (Cope). (U. S. Nat. Mus., Cat. No. 40101.)

C. Not very abundant.

Length of longest specimen, 3 inches. Head 4 in the length of the body; depth, $4\frac{2}{5}$; dorsal rays, 8; anal rays, 8. Scales in the lateral line, 35 to 36.

Body elongate, slender, with the dorsal region little elevated. Snout blunt; mouth very small, its gape parallel with the axis of the body, end of maxillary reaching about two-thirds distance to vertical from anterior margin of the orbit.

Length of snout equal to diameter of the eye, $3\frac{1}{3}$ in the length of the head.

Origin of first dorsal ray midway between tip of snout and base of caudal fin; scales before the dorsal not crowded, 15 to 16 in a series. Tips of pectoral fins reaching nearly to base of ventrals; ventrals reaching anal.

Teeth 4-4, slightly hooked at the tips; edges crenate; preorbital bone large, vertical diameter two-thirds diameter of eye, horizontal diameter three-fourths diameter of eye.

No markings on the fins; a dark band on sides and around the snout the black on the snout on the upper jaw only.

This species differs from *Notropis microstomus* in having comparatively a smaller mouth, a more slender form, larger snout, higher fins, and a larger preorbital bone.

14. *Notropis whipplei* (Girard). (U. S. Nat. Mus., Cat. No. 40113.)

Silver-fin.

M. L. Not abundant.

15. *Notropis megalops* (Rafinesque). (U. S. Nat. Mus., Cat. No. 40108.)

Common Shiner.

M., L., C., G., P. Very abundant.

16. *Notropis lythurus* Jordan and Gilbert.

Red-fin.

L., C., G., P. Scarce.

17. *Notropis atherinoides* (Rafinesque).

M. Scarce.

18. *Ericymba buccata* Cope. (U. S. Nat. Mus., Cat. No. 40105.)

L., C., G. Very abundant in L.; much less so in other localities.

19. *Rhinichthys atronasmus* (Mitchill). (U. S. Nat. Mus., Cat. No. 40111.)

Dace.

L. Not abundant.

20. *Hybopsis kentuckiensis* (Rafinesque). (U. S. Nat. Mus., Cat. Nos. 40086 and 40096.)

Horny-head.

M., L., C., P. Abundant in all places except P.

21. *Semotilus atromaculatus* (Mitchill). (U. S. Nat. Mus., Cat. No. 40091.)

Chub; Horned Dace.

M., L., C., G., P. Abundant.

22. *Opsopœodus emiliæ* Hay.

Length of specimens, $2\frac{1}{4}$ inches; head, $4\frac{1}{4}$ in the length of the body; depth, $4\frac{1}{3}$. Dorsal, one short and nine long rays; anal, 1-8; scales, 40 in the lateral line.

Body elongate, not much compressed, rather robust anteriorly; caudal peduncle slender.

Snout bluntish; mouth very small and very oblique, its gape making an angle of at least 60° with the axis of the body. Lips very thin; chin convex and projecting beyond margin of the upper lip when the mouth is closed. Eye moderate; its diameter $3\frac{1}{6}$ in length of head. Length of snout, four-fifths diameter of the eye, end of the maxillary reaching about two-thirds to vertical from anterior margin of the orbit.

Origin of first dorsal ray nearer tip of snout than base of caudal fin by about diameter of the eye; first dorsal ray about one-half length third dorsal ray; second about three-fourths the length of the third. Length of longest dorsal ray, four-fifths length of the head, its tip reaching beyond tip of last ray when the fin is deflexed. Anal similar, but smaller. Tips of pectoral fins reaching two-thirds distance to base of ventrals; ventrals reaching vent, which is midway between base of pectoral and base of caudal fin. Caudal fin forked; outer rays more than twice length of inner rays.

Scales before dorsal fin not crowded, 16 in a series.

Teeth, 5-5, slightly hooked at tips, and with grinding surface and slightly crenated edges. Lateral line incomplete.

Straw-colored, with top of head black. The first five dorsal rays (including short one) black, next two rays white, and the last three black. All the other fins plain, with no dark markings.

The above description is taken from two specimens from Maumee River.

Dr. D. S. Jordan has compared these two specimens with the types of *O. emiliæ*, types of *Trypanodon megalops* Forbes, and with specimens from New Harmony, Ind., and furnishes me with the following notes: "The two specimens (Maumee) are larger and brighter in color than types of *O. emiliæ*; they are more compressed, brighter, and with slightly larger eye than *T. megalops*; they are also larger and have more black on the dorsal than the New Harmony specimens. All, however, seem to belong to one species."

23. *Notemigonus chrysoleucus* (Mitchill). (U. S. Nat. Mus., Cat. No. 40100.)

M., P. Not abundant.

24. *Dorosoma cepedianum* (Le Sueur). (U. S. Nat. Mus., Cat. No. 40106.)
Hickory Shad.

C. Rather abundant.

25. *Umbra limi* (Kirtland). (U. S. Nat. Mus., Cat. Nos. 40057 and 40110.)
Mud Minnow.

C., G., L. Rather common in small bayous.

26. *Lucius vermiculatus* (Le Sueur). (U. S. Nat. Mus., Cat. No. 40098.)
Little Pickerel.

C., L., P. Not very abundant.

27. *Anguilla anguilla rostrata* Le Sueur.
Eel.

Specimens of this species have been taken in the Maumee River; none seen by me in 1887.

28. *Labidesthes sicculus* Cope.

A few small specimens taken in the Maumee River.

29. *Apredoderus sayanus* (Gilliams). (U. S. Nat. Mus., Cat. No. 40104.)
Pirate Perch.

G. One small specimen taken.

30. *Ambloplites rupestris* (Rafinesque). (U. S. Nat. Mus., Cat. No. 40097.)
Rock Bass.

M. Not abundant.

31. *Lepomis cyanellus* Rafinesque. (U. S. Nat. Mus., Cat. Nos. 40083 and 40095.)
Sun-fish.

M., C., L., G., P. Abundant.

32. *Lepomis megalotis* (Rafinesque.) (U. S. Nat. Mus., Cat. No. 40094.)

M., L., P. Less abundant than the former.

33. *Micropterus dolomieu* Lacépède. (U. S. Nat. Mus., Cat. No. 40115.)
Small-mouthed Black Bass.

M. Two small specimens taken; not very abundant.

34. *Micropterus salmoides* Lacépède.
Large-mouthed Black Bass.

M. One specimen taken on a trout line. Both this and the former species are less common than formerly.

35. *Etheostoma pellucidum* (Baird). (U. S. Nat. Mus., Cat. No. 40114.)

Common in the river where the bottom is sandy.

36. *Etheostoma nigrum* Rafinesque. (U. S. Nat. Mus., Cat. Nos. 40082 and 40107.)

M., C., G., L. Abundant.

37. Etheostoma caprodes Rafinesque.

Log Perch.

M. One specimen taken.

38. Etheostoma aspro (Cope and Jordan). (U. S. Nat. Mus., Cat. No. 40081.)

Black-sided Darter.

M., C., L. Not abundant.

39. Etheostoma cœruleum Storer.

Rainbow Darter.

L. One specimen taken.

COE COLLEGE, CEDAR RAPIDS, IOWA, *January 15, 1889.*